

## ASTHMA

*This information sheet is for your general information and is not a substitute for medical advice. You should contact your doctor or other healthcare provider with any questions about your health, treatment or care.*

### What is asthma?

Asthma is a condition in which hyper-reactive airways (bronchi) of the lungs constrict (become narrow) when exposed to triggers such as cold, smoke or infections of the upper airways. This results in the typical symptoms of wheezing, coughing, chest tightness and shortness of breath. The extent of the airways narrowing and how long each episode lasts may vary greatly.

Asthma affects millions of people worldwide. Many different genetic and environmental factors play a role in causing asthma. Symptoms can range from mild to severe. Asthma cannot be 'cured', but it can be controlled through easing and preventing symptoms.

The purpose of asthma treatment is to manage the condition in order to live as normal a life as possible. Being well-educated about the condition and actively managing it is critical for normal life.

The severity of asthma is an important factor in determining an appropriate treatment plan. Asthma can be classified as mild, moderate or severe, based on a number of factors.

### Successful management of asthma involves four components:

1. understanding the condition and how it is treated
2. controlling asthma triggers such as:
  - hay fever
  - acid reflux
  - smoking
  - pets
  - dust or allergen exposure
3. monitoring symptoms and lung function
4. medication.

### What causes asthma?

The interaction of certain genes with environmental factors results in changes in the small airways of the lungs. The inflammation in the airways is associated with spasm and hypertrophy of the muscle layer and increased reactivity to triggers that may be allergens or non-specific stimuli such as cold air, emotions, smoking, etc., with increased secretion of mucus. It is then more difficult for air to exit and to a lesser extent enter the lungs. This leads to wheezing and breathlessness.

### Asthma triggers

Symptoms vary at different times and may flare up due to a number of triggers. Recognising triggers is important in management of asthma. However, avoiding these triggers will not eradicate the condition but merely improve the control of the condition. Regular therapy is still required consisting, most importantly, of inhaled cortisone sprays.

### Some common triggers include:

- inhaled allergens (house dust mite, animal fur, pollen and smoke)
- respiratory infections
- exercise
- anxiety or emotional stress
- certain drugs (anti-inflammatories such as aspirin and ibuprofen)
- menstrual cycle in women.

## Symptoms of asthma

- Coughing
- Wheezing
- Breathlessness
- Sensation of a 'tight' chest

Symptoms may be worse at night, resulting in disturbed sleep. They may occur more frequently or only in certain seasons (seasonal symptoms), or only when exercising or engaging in strenuous activity (exercise-induced asthma). Most patients who develop those symptoms when exercising have asthma. Each episode may last for a short while or persist for days or weeks unless treated. They may also develop gradually or rapidly.

## Diagnosis of asthma

Asthma is diagnosed on the basis of the history of the symptoms, a clinical examination and tests of lung function.

Spirometry is a specialised test that measures the flow of air in and out of the lungs. This test is used to confirm the diagnosis and only requires the patient to breathe into a tube connected to the machine that does the measurements.

Monitoring the control of asthma is best achieved by assessment of control, which involves:

- measurement of peak flow
- whether there are any exacerbations requiring emergency room or hospital admissions
- how often you use your reliever
- whether you are awoken at night with a tight chest
- whether asthma interferes with your daily activities
- whether you and your doctor feel that your asthma is controlled or not.

The peak expiratory flow rate (PEFR) measurement can be used to assess the severity of an attack. Sometimes it is difficult to tell how tight the lungs are and this can be monitored by a peak flow meter. It is unusual for a patient to require a daily peak flow unless the other symptoms of lack of control are present.

Keeping an 'asthma diary' to record daily peak-flow readings and asthma symptoms can help patients to identify a cause-and-effect relationship between exposure to certain asthma triggers, decreases in peak flow and worsening of asthma symptoms. The diary can also help track medication use.

## Treatment of asthma

Medication is the main form of treatment for most people in managing asthma. The medication used varies according to the type and severity of asthma. An individual's asthma treatment plan must constantly be adjusted because the severity of the condition changes over time. As symptoms improve, medication should be reduced. As symptoms worsen, medication should be increased.

### 1. Inhalers

Most people with asthma are treated with inhalers. Inhalers deliver a small dose of drug directly to the airways. The dose is enough to treat the airways. However, the amount of drug that gets into the rest of your body is small so side effects are unlikely, or minor. There are various inhaler devices made by different companies. Different ones suit different people. A doctor will advise on the different types and prescribe the appropriate ones.

Inhalers can be grouped into 'relievers', 'preventers' and 'long-acting bronchodilators':

- **A reliever inhaler** is taken '*as required*' to ease symptoms. The drug in a reliever inhaler relaxes the muscle in the airways, making them open wider and relieving symptoms. These drugs are also called 'bronchodilators' as they dilate (widen) the airways. There are several different reliever drugs to ease symptoms, e.g. *salbutamol* and *terbutaline*. These come in various brands made by different companies. It is most unusual that a reliever would be all that you require. If these are used more than twice a week, a controller medicine is required. Use of these inhalers can also be a monitor of asthma control. If usage increases it usually indicates that your condition may worsen.
- **A preventer inhaler** is taken *every day* to prevent symptoms from developing. **It does not provide immediate relief from symptoms.** The drug used in preventer inhalers is a corticosteroid, e.g. *beclomethasone*, *budesonide*, *ciclesonide* or *fluticasone*. There are various brands. Steroids work by reducing the inflammation in the airways. When the inflammation has gone, the airways are much less likely to become narrow and cause symptoms. It takes seven to 14 days for the steroid in a preventer

inhaler to build up its effect. However, after a week or so of treatment, the symptoms have often gone or are much reduced. It can take up to six weeks for maximum benefit. You should not need to use a reliever inhaler very often (if at all). Despite this, you must continue to take the controller even if the symptoms are completely gone, as it will return over a few weeks if it is stopped.

- **A long-acting bronchodilator** may be advised in addition to a steroid inhaler. One may be needed if symptoms are not fully controlled by the steroid inhaler alone. The drugs in these inhalers work in a similar way to 'relievers', but work for up to 12 hours after taking each dose. They include *salmeterol* and *formoterol*. Some brands of inhaler contain a steroid plus a long-acting bronchodilator for convenience.

## 2. Tablets

- Most people do not need tablets, e.g. *theophylline* or *montelukast*, as inhalers usually work well. However, in some cases a tablet (or liquid form for children) is prescribed *in addition* to inhalers if symptoms are not fully eased by inhalers alone. Some young children use liquid medication instead of inhalers, e.g. *ketotifen*.
- A **leukotriene receptor antagonist** is a good treatment option in children as an additive in asthmatics with hay fever.

Oral cortisone tablets: A short course of steroid tablets such as *prednisolone* is sometimes needed to ease a severe or prolonged attack of asthma. Steroid tablets are good at reducing the inflammation in the airways during attacks.

Some people worry about taking steroid tablets. However, a short course (10 to 14 days) of steroid tablets usually works very well and is unlikely to cause side effects. Most of the side effects caused by steroid tablets occur if you take them for a long time (more than several months), or if you take frequent short courses of high doses.

A common treatment plan for a person with moderate asthma is:

- A preventer inhaler taken each morning and at bedtime usually prevents symptoms throughout the day and night.
- A reliever inhaler for when breakthrough symptoms occur and an extra dose of a reliever inhaler just before exercise to prevent symptoms.
- A long-acting bronchodilator or tablets if symptoms are not controlled with the above.

### Other important points to remember:

- **It is vital to know how to use inhalers correctly.** In some people, symptoms persist simply because they do not use their inhaler properly and the drug from the inhaler does not get into the airways properly. The use of a spacer increases the amount of medication being delivered to the lungs. See a doctor or nurse if symptoms are not fully controlled.
- **If severe symptoms develop that are not eased by a reliever inhaler, see a doctor urgently.** Emergency treatment with a high-dose reliever and controller drugs and other treatments may be needed, sometimes in hospital. A severe asthma attack can be life threatening. If in doubt, always call a doctor.
- **Yearly influenza vaccination is recommended** (the annual 'flu shot') to minimise the chances of developing a severe flu, thereby reducing the likelihood of a worsening of asthma symptoms.
- **Asthma control cannot be achieved by medication alone;** it also requires lifestyle changes and attention to aggravating factors.

Please keep the following information handy whenever you visit your doctor or contact your scheme's chronic disease management programme:

- Record your peak flow measurement
- Note any night-time coughs and/or wheezing
- Level of activity and frequency
- Any increased use of a reliever
- Any emergency room visits or hospital admissions
- Other triggers

### Reference

1. UP TO DATE: ASTHMA Patient Information.

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